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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,856	03/09/2004	Ian W. Hunter	65689DIV3(43382)	2436

21874 7590 05/05/2009

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EXAMINER	
SODERQUIST, ARLEN	

ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
05/05/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/796,856	HUNTER, IAN W.	
	Examiner	Art Unit	
	Arlen Soderquist	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12 and 15-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12 and 15-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9-3-08,2-10-09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The disclosure is objected to because of the following informalities: the status of the non-provisional parent applications on page 1 of the specification should be updated.

Appropriate correction is required.

2. Claim 7 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1 requires that the coatings be dissolvable. Resuspension is not within the scope of a dissolvable coating. Thus claim 7 does not further limit the scope of claim 1.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Macario (US 4,682,890) in view Storm (US 3,768,974, newly cited and applied), Price (US 3,770,383, newly cited and applied), Lilja (US 4,088,448, newly cited and applied), Hevey (US 4,234,316, newly cited and applied), Astle (US 4,562,871, newly cited and applied), Godsey (US 4,761,378, newly cited and applied), O'Bear (US 5,609,828, newly cited and applied) or Cottingham (US 5,795,748, newly applied). In the patent de Macario describes a carrier and a microsample holder (30) for use in horizontal beam spectrophotometers in place of conventional cuvette supports that normally are used with such spectrophotometers. The microsample holder is formed as a plate having a number of retaining elements preferably in the form of a circular

perforated areas for retaining drops of samples to be analyzed by the spectrophotometer. Columns 2-3 teach a sample holder of similar design is known for vertical beam spectrometers. Columns 7-8 teach that the holder (30) is formed with a set of retaining elements, such as a row of four retaining elements (32,34,36,38). The retaining elements are of circular shape having diameters on the order of about 3 mm, each retaining element being capable of retaining a 5-10 µl sample of liquid to be analyzed. The surfaces of holder (30) other than the circular areas may be coated with a thin layer of hydrophobic material to assure retention of the liquid samples within the circular areas (column 7, lines 12-16). The circular hole diameter permits the surface tension of the liquid sample to retain that sample stably within the confines of the hole. The remainder of holder (30) need not be light transmissive, it is, nevertheless, advantageous to its construction to construct the plate of transparent material, such as glass, plastic, quartz or the like (these materials have inherent hydrophilic properties to be able to hold aqueous samples by surface tension). The holder (30) may be modified within the scope of the invention to have two or more rows of retaining elements, if desired, such as the rectangular pattern shown in FIG. 5 and described in column 7, lines 45-61 or column 11, lines 6-28. It is recognized that the holder is readily usable with the normal support-receptacle and automatic or manual indexing mechanism of conventional horizontal beam spectrophotometers to pass through the center of each sample retained by retaining elements. In this respect the paragraph bridging columns 7-8 teaches that since the overall height, length and width of the carrier are identical (or substantially identical) to the height, length and width of the conventional cuvette support, the carrier is readily usable with the normal support-receptacle and automatic or manual indexing mechanism of conventional horizontal beam spectrophotometers. Thus, the retaining elements are aligned with the analyzing beam that normally passes through windows of the conventional cuvette support. It is seen that the analyzing beam thus passes through the center of each sample retained by retaining elements. The beam passes through only one sample at a time, and as the carrier is indexed, and successive samples are exposed to the beam. The patent also teaches that the de Macario device is meant to reduce the amount of sample required for the testing. The paragraph bridging columns 10-11 teaches the addition of reagents and samples to the holes of the device. This includes anchoring reagents or biologicals to the circular surfaces of the thin, flat dishes or to the inner surfaces of the circular perforated webs which comprise the retaining elements

(retaining the regents on the hydrophilic regions as a coating). de Macario does not teach placing the reagents there in a dissolvable or resuspendable coating.

In the patent Storm teaches a disposable plastic syringe containing a measured quantity of a water-soluble colorimetric reagent composition proportioned to the volume of water sample which may be drawn into the syringe. The color produced in the water sample is compared to a chart standard which indicates the concentration of chlorine in the water sample. The measured quantity of the reagent composition is preferably applied as a dried printed spot applied to an inside surface of the syringe device. Column 1, lines 14-32 teach that in general, the device consists of a disposable syringe which contains a colorimetric indicator material, preferably in dried form, which when dissolved in the water to be tested, produces one of a number of distinguishable colors. When a given weight of the indicator material is dissolved in a fixed amount of the water to be tested, the chlorine content per unit volume is immediately ascertained by comparison of the colored sample with the colors reproduced on a printed chart. The preferred device consists of a small disposable syringe made of transparent plastic sheet, which contains within its bulb a tablet or printed "spot" of the colorimetric reagent, in weight corresponding to the volume of water sample which will subsequently be drawn into the syringe. When the water sample is drawn into the syringe, and the device shaken to dissolve the indicator material, the color produced measures the chlorine concentration. Column 2, lines 29-64 discuss the composition of the reagent.

In the patent Price teaches a test slide for the performance and observation of an immunochemical or diagnostic test on its surface, which surface is insoluble in, impermeable to, non-absorbent to, and wettable by, water, carries on its surface at least one circumscribed test area containing a single solid dried stable spot deposit of an immuno-chemical reagent providing a predetermined amount of an antigen or an antibody, or alternatively, a second solid dried spot of a buffer material, said spot or spots upon being moistened with a liquid and/or the liquid to be tested being reconstituted to the reagent and/or buffer, to form an observable area of reaction mixture. Column 4, lines 54-64 teach that in performing a diagnostic test, such as, for example, a test for gonorrhea, a measured amount of the body fluid to be tested, such as blood or blood components, is placed on or in proximity of a dried reagent spot. Additionally, the dried antigen reagent spot can be reconstituted with a liquid, such as water. The spot or spots and the test

liquid are then mixed by stirring with a toothpick, glass rod, or plastic stirring device, as to unite the reagent or reagent-buffer to a single area of reaction mixture in which the immunochemical reaction takes place. Column 4, lines 4-18 teach that in the preparation of the test slides or cards, the reagents are constituted as solutions or suspensions in a volatile liquid medium, advantageously an aqueous medium. Such solutions or suspensions may also contain potentiating or resuspending aids. It has been found that a number of adjuvants contribute to the ease of resuspension of the dried reagents and serve to produce a firm bonding of the dried reagent to the test slide surface. These reagents include, for example, bovine serum albumin in concentration up to an including 5% (wt/vol), 1 percent being optimal; lactalbumin hydrolysate in concentrations up to and including 5 percent, 1 percent being optimal; and gum arabic in concentration of about 0.5 percent. Examples 1-2 give formulations for two different tests.

In the patent Lilja teaches an apparatus for sampling, mixing the sample with a reagent and making optical analyses. Column 2, lines 38-68 teach a device with a cavity (11) generally filled with sample by capillary forces. The cavity of the cuvette is supplied with a reagent (an agent to react with the sample drawn into said cavity) by evaporation, freeze-drying, spraying, screen printing or in another suitable manner according to the manner in which the cuvette is manufactured. The amount of reagent is thoroughly regulated depending on the size of the cavity. By coating the reagent, the reagent dissolution rate in the sample can be controlled. For example, for the dissolution of reagents in a definite sequence, which is suitable in making analyses in several reaction steps, or for the isolation of sensitive reagents. After a reagent has been deposited in the cavity the cuvette is ready for use. When the cuvette illustrated in figure 1 is to be used the outwardly open side of the cavity is brought in contact with the liquid sample to be examined, causing the sample to penetrate into the cavity and mix with the reagent either spontaneously or with the aid of, for example, a vibrator which may be a separate unit or part an analyzing apparatus such as a photometer. The sample is then placed in the analyzing apparatus, and the analysis is carried out.

In the patent Hevey teaches a device for delivering measured quantities of reagents into an assay medium. As shown in figures 1-2, the assay device for delivering precise quantities of reagents is a support member (10) in the form of a stiff strip or sheet of water impervious plastic such as polycarbonate to which are cemented four discs (12-15) of solid water impervious

polyester of polystyrene sheet 0.5 cm in diameter. Each disc bears on its outer face an element in the form of a film (17-20) of dry solid water-soluble binder approximately 0.05 mm thick. In order to improve bonding of the film to its respective disc, the latter may first be treated to render its surface hydrophilic by any conventional procedure, after which the film of binder is formed in place by depositing a solution of the binder on the surface and allowing it to dry. Two or more of the films carry dispersed within them a precise and known quantity of the desired different reagents, each reagent being dispersed in each film by applying to the surface of the film, by means of a micropipette, a precise and known volume of a water solution of known concentration of the desired reagent, then allowing the film containing the reagent solution to dry. Alternatively, the reagent can be dissolved in an aqueous solution of binder and the mixed solution applied to one of the discs and dried to form the dry solid films containing the reagent dispersed in it. In the embodiment shown in figures 3-4, the support member comprises a stiff water impervious rod (30) carrying adjacent its lower end a plurality of projecting fins or propeller blades (32 -35) of stiff water impervious plastic each carrying on one face an element in the form of a dry solid film (37-40) of water-soluble binder approximately 0.05 mm thick. A desired reagent in precise quantity is dispersed within two or more of the films by the same procedure as described above for the embodiment of figures 1-2. Arranged on the outer surface of reagent-containing film 40 is a dry separator film (42) of the same water-soluble binder free from reagent, serving as a separator or barrier, and on top of film 42 another element in the form of a dry binder film (44) containing a measured quantity of a different water-soluble reagent dispersed in it.

In the patent Astle teaches a rehydrator for dispensing precise amounts of liquid to each row of wells in a titration tray where the dispensing of the liquid is performed through valving means in timed relation to indexing of the platform to present a row of wells beneath the dispensing orifices. The indexing of the tray and the valving means are accomplished by the same drive means to obtain the timed relation. Column 1, lines 5-21 teach that the device is for adding a precise amount of liquid to a plurality of receptacles and, more particularly, relates to an apparatus for rehydrating dried reagents in a titration tray. In various fields of laboratory work, there is a need to deliver reagents in measured quantities to a plurality of receptacles. A typical example is antimicrobial susceptibility testing in the clinical microbiology laboratory. A test tray

may be supplied in a dry form to facilitate shipping and to lengthen its shelf life. The test tray consists of a number of wells, each containing a different antimicrobial concentration or a biochemical for organism identification. Prior to use, the laboratory must rehydrate the tray by adding liquid to each well to resuspend the reagents contained therein.

In the patent Godsey teaches an improved microbiological test tray provided with fasteners so that two or more of the trays may be joined together for ease in inoculation, incubation, lyophilization and reading. In another aspect of the invention an improved tray structure is described which provides openings for the flow of vapor during the lyophilization step so that a greater number of trays may be lyophilized at the same time and also that lyophilization may be carried out in a shorter period of time due to the improved vapor flow. Column 1, lines 8-48 teach that a number of different microbiological tests are carried out in trays having a number of chambers that are manufactured to have reagents in the chambers. Typically the test reagents are complex chemicals which in the presence of an active fermenting culture change color, become cloudy or otherwise indicate that fermentation is or has taken place. During manufacturing the reagents are charged into the chambers in the form of an aqueous solution. After charging the test trays are placed into a lyophilizer where the ingredients are first frozen and then the water is removed by sublimation upon the lowering of the ambient pressure to form a vacuum. It is the test tray containing the dried reagents which is sold and used for carrying out microbiological tests. When a test is to be performed a microorganism is inoculated into each of the test chambers with sufficient water to reconstitute the reagents. The test tray is then incubated at an appropriate temperature, usually elevated above ambient, for an extended period of time. After a predetermined period the individual chambers are examined for the presence or absence of a reaction or an indication of color change, or a change in turbidity. While these chambers may be read visually by a technician there have been developed a number of reading machines which facilitate the reading of the trays and result in the saving of technicians' time.

In the patent O'Bear teaches an improved sample card or biocard (100), typically used in biochemical analysis. Column 1, lines 9-36 teach that biocards have been used to analyze blood or other biological samples in a spectroscopic or other automated reading machine. The biocard contains biological reagents, nutrients or other material that has been deposited in a series of

small wells (110), formed in the card in rows and columns and sealed, prior to injection of patient samples. The biocards are filled with patient sample material through fine hydraulic channels formed in the card. The microorganisms in the samples may then be permitted to grow or reactions to proceed, generally over a period of up to a few hours, although the period varies with the type of bacteria or other substance analyzed and sample used. After the incubation, the samples contained in the wells are placed in front of a laser, fluorescent light or other illumination source. The content of the sample in a given well can then be deduced according to readings on the spectrum, intensity or other characteristics of the transmitted or reflected radiation, since the culture of different bacteria or other agents leave distinctive signatures related to turbidity, density, byproducts, coloration, fluorescence and so forth. Column 3, lines 30-39 teach that the sample wells of the card contain dry biological reagents which were previously put in place in the wells, by evaporative, freeze-drying or other means, prior to being dissolved in solution with the injected patient sample for analysis. Each well can hold a deposit of a different reagent, for identifying different biological agents, if desired.

In the patent Cottingham teaches an apparatus for carrying out a homogeneous nucleic acid amplification and nucleic acid assay on a liquid biological sample comprises a sample well and an optical window element which is received in the sample well. Opposed, spaced-apart surfaces of the optical window element and sample well define a capillary chamber into which a liquid biological sample is drawn by capillary force. By spreading the liquid biological sample into a thin film within the capillary chamber, head space is eliminated, heat transfer to the sample is maximized, and a large optical target is achieved to facilitate the detection step of the assay. The disclosed apparatus is particularly suited for use with homogeneous nucleic acid amplification and fluorescence polarization assays, but can also be used in connection with other types of biological and chemical processes. Figures 5A-5B are sectional views illustrating the internal configuration of the sample well assembly (22), with the seal (18) of the apparatus. The optical window element (20) is held by the notched ribs (26) in a parallel relationship with the bottom wall (32) of the sample well (14), with a uniform gap (preferably about 0.020 inch in height) being maintained between an upwardly-facing surface (50) of the bottom wall and a confronting, downwardly-facing surface (52) of the optical window element. This gap or space defines a cylindrical or disk-shaped capillary chamber (54) between the surfaces. A spot (56)

containing dried homogeneous nucleic acid amplification and fluorescence polarization assay reagents is affixed to the upwardly-facing surface at a central position within the capillary chamber. When a liquid biological sample is introduced into the capillary chamber, the reagents in the dried spot are rehydrated by the sample to initiate the desired amplification and assay reactions. After the liquid sample (60) has filled the capillary chamber, the liquid biological sample rehydrates the dried nucleic acid amplification and assay reagents within the dried spot, and a homogeneous amplification and assay reaction occurs while the sample is contained within the capillary chamber. Due to the thinness of the capillary chamber and the large surface area with which the liquid biological sample comes into contact, the sample heats up within a few seconds of being pipetted into the chamber to the optimum temperature desired for DNA amplification. Thus, by the time the dried reagents dissolve and diffuse throughout the liquid biological sample to begin "priming" the DNA amplification, the reagents are already up to the optimum temperature. In this way, a "hot start" of the DNA amplification reaction is achieved. Depending upon the nature of the assay reaction, the apparatus may detect fluorescence polarization, fluorescence energy transfer, light absorbance, or any other optical response or characteristic of the liquid biological sample. In the preferred embodiment, the dried reagent spot contains both DNA amplification and homogeneous DNA assay reagents, the latter preferably consisting of fluorescence polarization assay reagents. The chemical reagents in the dried spot are carried in a readily soluble matrix, such a trehalose or another carbohydrate. These reagents will spontaneously re-suspend when exposed to an aqueous sample introduced into the capillary chamber. It will be understood that more than one dried reagent spot may be provided in the capillary chamber if desired, as for example by providing the amplification reagents in one spot and the assay reagents in a different spot. In the case of a homogeneous DNA amplification and assay, however, the reagent spots (if separated) should be positioned in such a way that they are dissolved by the liquid biological sample at essentially the same time.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate reagents such as those taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham into the de Macario device in a form that is dissolvable or resuspendable as taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham because of the ability to provide the reagents in a manner that they will readily react with

reagents while providing a reagent that has long shelf life as taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham.

5. Claims 1-6, 8-10, 12 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Macario as explained above in view of Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham as explained above and Davis (US 5,290,705) and optionally in view of Bocker (US 5,786,226). The hole diameter, plate thickness and density of holes taught by de Macario are greater than claimed, however the patent also teaches that the de Macario device is meant to reduce the amount of sample required for the testing. de Macario also does not teach an array detector.

In the patent Davis teaches a sample support for optical observation which is similar to that taught by de Macario. The drawings show a specimen tray or holder (1) to be employed for optical observation or analysis, and in particular for use in infrared microspectroscopy. The holder (1) includes one or more openings (2) and each opening is provided with an internal ledge or shoulder (3) and a specimen support (4) is supported on each ledge. Each support is preferably a disc-like member having a pair of generally fiat, parallel, opposed surfaces and one or more unobstructed holes (5) extend through the support between the opposed surfaces. Each support is formed of a generally rigid material which will not be attacked by water or acids. Metals, such as stainless steel or gold; or plastic materials such as nylon, polytetrafluoroethylene (Teflon), or Kevlar, can be used to produce the support 4. As shown in the drawings, holes (5) are generally circular in cross section, but it is contemplated that the holes can have other cross-sectional configurations. Davis teaches that holes (5) have a diameter greater than 10 microns, generally in the range of about 10 μm and 13 mm. The cross sectional area or diameter of the holes is correlated with the surface tension of a liquid specimen to be analyzed, such that a film (6) of the liquid will span or enclose the holes, as shown in figure 2. This is taught as being adjustable to provide a quality spectrum based on the thickness of the sample being investigated. Holes (5) can all be of the same diameter or cross-sectional area, or alternately as illustrated in figure 2, the holes can have different diameters. With different diameter holes, the thickness of the liquid film which bridges or encloses the holes will vary with the hole diameter, and thus the operator can select a film thickness to provide the best quality spectrum. By directing an infrared beam through the unsupported film in one of the selected holes, an infrared spectrum of the specimen

can be generated. In figure 2 the distance between the two holes is shown as less than the diameter of the holes.

In the patent Bocker teaches quantitative transmission spectroscopy where a sample liquid is applied onto a sample carrier having a net in such a manner that the liquid spreads across the meshes of the net. The liquid on the net is exposed to radiation essentially perpendicularly to the net, and the transmitted radiation is detected. The net accomplishes a dosing of the liquid in such a manner that identical meshes include identical quantities of liquid. For a given net, it is possible to derive the amount of liquid, which is located in a mesh and accessible to radiation, from a net constant. Knowing the amount of liquid detected by the radiation, it is possible to use the radiation absorption to calculate the concentration of one or several analytes contained in the sample liquid. In column 5 lines 23-36, Bocker teaches the detection of samples in the filled meshes. The net of a sample carrier can be scanned with a light beam which is smaller than the cross section of the meshes similar to the detection method of de Macario. Detecting the transmitted light beam allows differentiating between liquid-filled and non-filled meshes. Advantageously, image recognition can be accomplished with a method where a light beam of a sufficient size is directed onto the net, and the transmitted radiation is detected with a CCD array. Based on the signals generated by the CCD array and using known algorithms for pattern detection, it is possible to distinguish between filled and unfilled meshes and to determine the number of filled meshes.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate reagents such as those taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham into the de Macario device in a form that is dissolvable or resuspendable as taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham because of the ability to provide the reagents in a manner that they will readily react with reagents while providing a reagent that has long shelf life as taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use smaller diameters within the range taught by Davis because of the ability to further reduce the sample volume and provide a quality spectrum using a single hole. Applicants are directed to the fact that the Courts have held the size of an article to be not a matter of invention; the discovery of an optimum value of a known result

effective variable without producing any new or unexpected results is within the skill of the routineer in the art; and mere duplication of parts without any new and unexpected results is within the skill in the routineer in the art. See In re Rose, 105 USPQ 237 (CCPA 1955), In re Boesch, 205 USPQ 215 (CCPA 1980) and In re Harza, 124 USPQ 378 (CCPA 1960), respectively. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize a density of holes and hole dimensions in order to produce a film thickness that would provide a proper spectra as taught by Davis and to provide a sufficient amount of sample to detect. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the detector array of Bocker in the de Macario method because of the ability to use the detected signal to determine multiple sample containing positions without scanning which Bocker teaches as an advantage.

6. Claims 1-6, 8-10, 12 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Macario (US 4,682,890 as explained above) in view of Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham as explained above and Davis (US 5,290,705 as explained above) and Modlin (US 6,071,748) or Stylli (US 5,985,214).

In the patent Modlin teaches a high-throughput light detection instrument and method. Confocal optics structure enables exclusive light detection from a sensed volume in a composition. Columns 1-3 discuss the use of libraries in the drug discovery process and the benefit of large libraries. In particular column 3, lines 12-35 discuss the need to conserve reagents to reduce the screening costs and the use of microplate formats having well densities as high as 9600 wells (96-9600) on a standard sized microplate. Figure 2 shows the difference in spacings. In the paragraph bridging columns 5-6 Modlin teaches the invention provides an analyzer that enables a wide range of assay formats which can be carefully selected and fine-tuned for screening desired targets with acceptable quality and reliability, while also allowing assays to be run in smaller containers with reduced volumes. These objectives are met, in part, by employing an optical system that minimizes sample interfacial boundary interference, thereby permitting reduction in assay volume in existing formats such as 96 or 384 well plates, and utilization of denser formats such as 768, 1536, 3456, or 9600 well plates. The analyzer also enables assay flexibility by providing the capability of automatically switching between different modes, including photoluminescence, photoluminescence polarization, time-resolved

photoluminescence, photoluminescence lifetime, and chemiluminescence modalities. Column 10 lines 25-39 teach detectors including photomultiplier tubes, photodiodes and charge-coupled devices (CCD).

In the patent Stylli teaches systems and methods that utilize automated and integratable workstations for identifying chemicals having useful activity. The invention is also directed to chemical entities and information (e.g., chemical or biological activities of chemicals) generated or discovered by operation of workstations. The automated workstations are programmably controlled to minimize processing times at each workstation and can be integrated to minimize the processing time of the liquid samples from the start to finish of the process. Column 9, lines 8-35 teach it will be advantageous to reduce the volume of the chemical or sample processed because liquid sample processing times benefit from volume reduction as liquid dispensing times are reduced, liquid aspiration times are reduced, diffusion times after addition of a reagent or sample are decreased, temperature control of a smaller volume is more uniform and consumable costs are greatly reduced. To reduce reagent (or chemical) volumes and permit dilution into smaller samples, the sample distribution module can include a liquid handler that comprises a plurality of nanoliter dispensers that can individually dispense a predetermined volume of less than approximately 2,000 nanoliters of liquid from a predetermined selection of addressable chemical wells into a predetermined selection of addressable sample wells. Preferably, nanoliter dispensers can dispense less than approximately 500 nanoliters, more preferably less than approximately 100 nanoliters, and most preferably less than approximately 25 nanoliters. Dispensing below 25 nanoliters can be accomplished by dispensers described by Stylli. Preferred, minimal volumes dispensed are 5 nanoliters, 500 picoliters, 100 picoliters, 10 picoliters. Preferably, a liquid handler comprises a plurality of nanoliter dispensers that can individually dispense a predetermined volume of liquid from a predetermined selection of addressable chemical wells into a predetermined selection of addressable sample wells. The nanoliter dispensers will typically have a center-to-center distance between each nanoliter dispenser of less than 9.0 mm. This feature permits liquid handling in conjunction with a variety of plate formats. Different types of nanoliter and picoliter dispensers can be used as described and known in the art, as well as such dispensers developed in the future. In one embodiment, the liquid handler can comprise a plurality of nanoliter dispensers that can individually dispense a

predetermined volume. Typically, dispensers are arranged in two-dimension array to handle plates of different well densities (e.g., 96, 384, 864 and 3,456). Column 15 line 14 to column 16 line 10 teach a plate stacker used as a plate buffer. Typically, a plate stacker will up/down stack plates of a standard footprint and with different densities which are taught as including 96, 384, 864, and 3,456 well number formats (spacings of- l cm to l mm) or greater (e.g., 6,912 or 13,024, spacings of less than l mm)). The operation of the sample distribution module will usually be highly flexible to satisfy the needs of different liquid processing applications. Predefined operations can be made available for selection by an end user, or end users may create an entirely new method. Operations can be performed on a wide variety of plates and batch sizes of plates can vary. Sample plates and chemical plates may be selected with a different format from distribution plates (e.g., daughter plates). The sample distribution module will typically provide for a stand alone mode and can be preferably integrated with a data processing and integration module.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate reagents such as those taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham into the de Macario device in a form that is dissolvable or resuspendable as taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham because of the ability to provide the reagents in a manner that they will readily react with reagents while providing a reagent that has long shelf life as taught by Storm, Price, Lilja, Hevey, Astle, Godsey, O'Bear or Cottingham. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use smaller diameters within the range taught by Davis because of the ability to further reduce the sample volume and provide a quality spectrum using a single hole and thereby provide the cost and time advantages taught by Modlin and Stylli. Applicants are directed to the fact that the Courts have held the size of an article to be not a matter of invention; the discovery of an optimum value of a known result effective variable without producing any new or unexpected results is within the skill of the routineer in the art; and mere duplication of parts without any new and unexpected results is within the skill in the routineer in the art. See In re Rose, 105 USPQ 237 (CCPA 1955), In re Boesch, 205 USPQ 215 (CCPA 1980) and In re Harza, 124 USPQ 378 (CCPA 1960), respectively. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize

a density of holes and hole dimensions in order to produce a film thickness that would provide a proper spectra as taught by Davis and to provide a sufficient amount of sample to detect. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the detector arrays of Modlin and Stylli in the de Macario method because of the ability to use the detected signal to determine multiple sample containing positions without scanning since the Modlin and Stylli references clearly show that the art of analysis devices had developed to the point that signal can be detected from wells spaced at the level required by the claims.

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571)272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Arlen Soderquist/
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